openreach

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Suppliers' Information Note

For The Openreach Network

Broadcast Access: 3GBit/s

Service Interface Description

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Introduction

This Suppliers Information Note (SIN) describes Openreach's 3GBit/s Broadcast Access service and provides technical information for Communications Providers (CPs), terminal equipment manufacturers and suppliers.

Service outline

This is an access service which allows transportation of 3GBit/s (1080p HD-SDI) broadcast video over optical fibre infrastructure.

The service meets the requirements of SMPTE Standard 424M for Television – 3 Gbit/s Signal/Data Serial Interface [1].

The 3Gbit/s customer interface cards can automatically detect and adapt to support a 1.485Gbit/s (HD-SDI) [2] or 270Mbit/s (SD-SDI/ASI) input signal. If a CP wishes to utilise a service for both Standard Definition (270Mbit/s) and High Definition (1.485Gbit/s, 3Gbit/s) signals this can be achieved by purchasing the 3Gbit/s product variant.

CP's signals are to be presented electrically on coaxial cable to the network terminating equipment (NTE) and must also comply with the above standard.

The service is limited to a maximum fibre route length of 70Km. Route distance checks are carried out as part of the initial survey work when an order has been placed. A main link is limited to a maximum of 35Km radial distance measured between the Openreach Serving exchanges (intermediate and host exchanges) at each end of a Broadcast Access service.

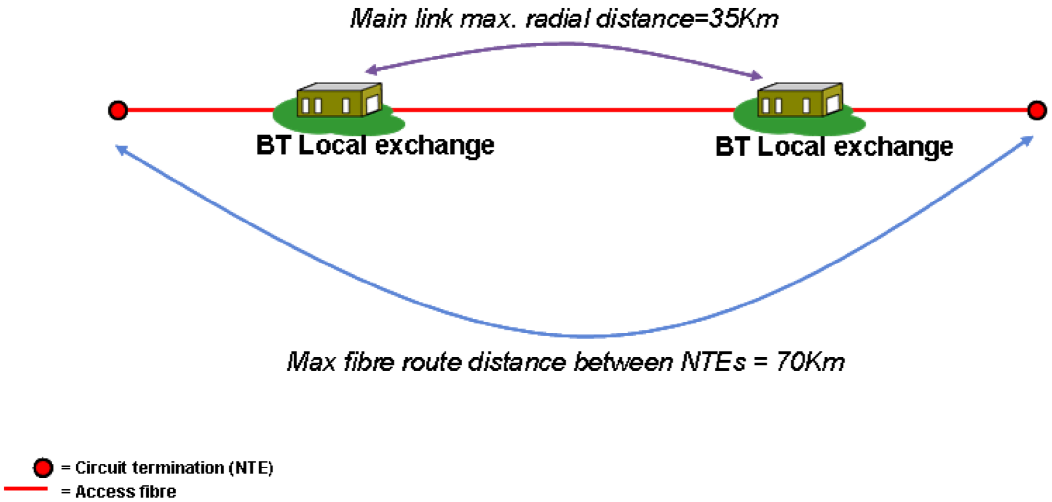
Main link max. radial distance=35Km
BT Local exchange
BT Local exchange
Max fibre route distance between NTEs = 70Km
= Circuit termination (NTE)
= Access fibre

Figure 1 - Service configuration

Please refer to the Broadcast Access product description for details of the circuit options available (http://www.openreach.co.uk/orpg/home/products/ethernetservices/broadcastaccess/broadcastaccess.doc)

Service availability

3GBit/s Broadcast Access circuits will be available on a point to point basis, within the UK.

The product will be available with a choice of unidirectional and bidirectional channel variants. All channels will operate at the same requested circuit bandwidth. These are as follows:

- Single channel unidirectional
- Single channel bidirectional
- Dual channel unidirectional
- Quad channel unidirectional
- Dual channel bidirectional
- Quad channel: dual unidirectional plus single bidirectional

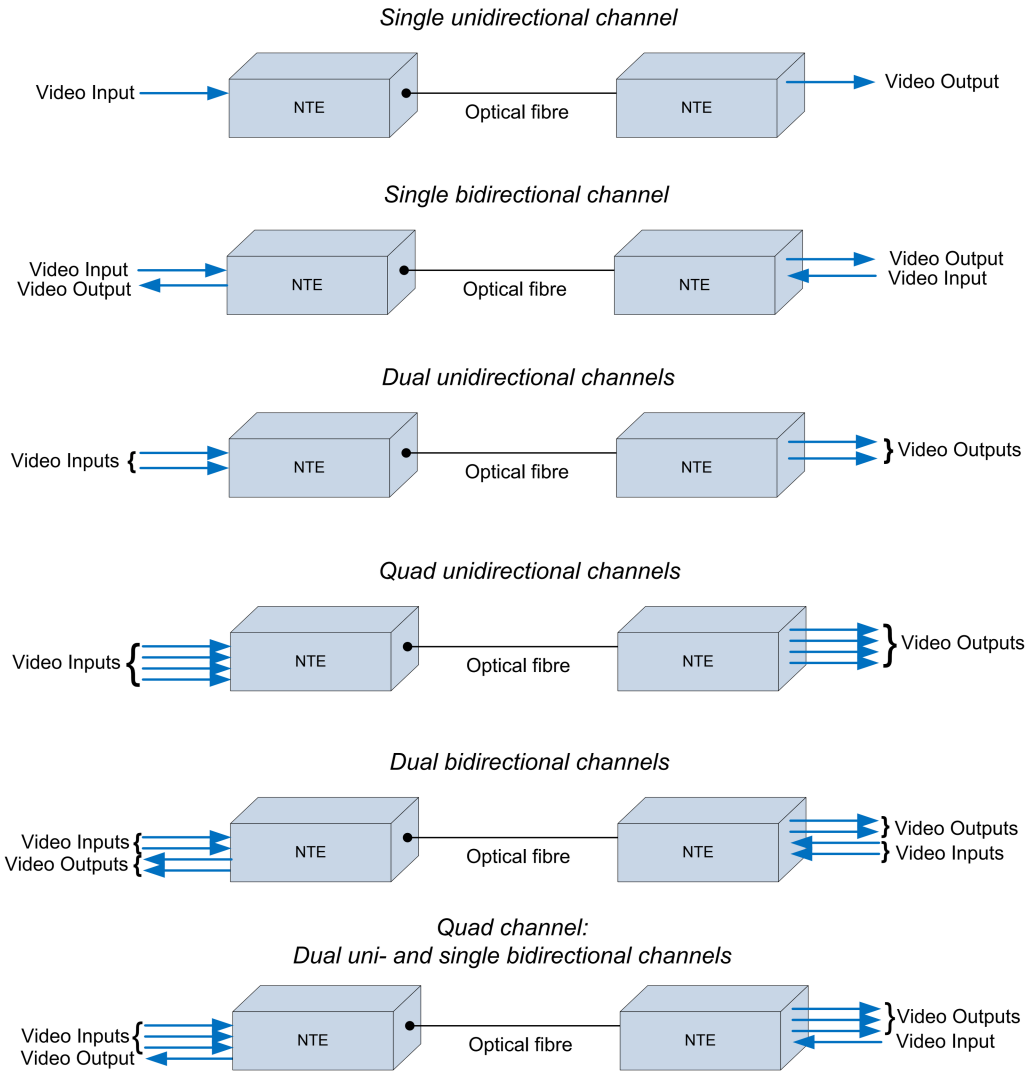

Figure 2 – Channel Variants

Technical specification

Overview

This product allows compliant 3GBit/s circuits to be transported between locations in the UK using Openreach's telecommunications optical fibre infrastructure. This is achieved by utilising specific NTEs which perform electrical to optical and optical to electrical signal conversion at each end of an optical fibre.

Standards compliance

CP signals presented to the NTE for transportation must comply with SMPTE Standard 424M. Likewise, the signal *handed back* to the CP after transportation will comply with this. Video formats supported by the product include:

Interface presentation

The following interfaces are provided by the NTE:

Interfaces at the NTE	Electrical presentation	Physical presentation of customer connection
270Mbit/s Input/output	ITU-R G.656 [3], SMPTE 259M [4] and ETSI EN50083 [5]	Customer connection - 75 Ohm BNC
1.485Gbit/s Input/output	SMPTE 292 [2]	Customer connection - 75 Ohm BNC
3Gbit/s Input/output	SMPTE 424M [1]	75 Ohm BNC with a centre pin meeting the mechanical characteristics of a 50 Ohm BNC (in accordance with IEC 60169-8)

Table 1 – Interface presentation

CP connection points are located at the rear of the NTE chassis. There will be no patch panel interface. Ports to be used will be allocated when the CP procures the service.

4SMPTE 424M specifies a typical input port receive sensitivity of 20dB (at one-half clock frequency). This is the maximum amount of cable loss permissible on signals applied to the input port of this Broadcast Access product. For guidance purposes only, the product has been tested for error-free operation with a 3GBit/s source carried over 80 metres of Bryant Unlimited SD13 coaxial cable to its input.

Video Formats Supported

This product supports the following video formats:

Standard Definition (270MBit/s SD-SDI) formats supported

- 525/59.94
- 625/50

High Definition (1.485GBit/s HD-SDI) formats supported

- 720p23.98
- 720p24
- 720p25
- 720p29.97
- 720p30
- 720p50
- 720p59.94
- 720p60
- 1035i59.94
- 1035i60
- 1080i50/1080sF25
- 1080i59.94/1080sF59.94
- 1080i60/1080sF30
- 1080p23.98
- 1080p24
- 1080p25
- 1080p29.97
- 1080p30
- 1080sF23.98
- 1080sF24

3GBit/s High Definition formats supported

3Gbit/s - A

- 1080p50
- 1080p59.94
- 1080p60

3Gbit/s - B

- 1080p50
- 1080p59.94
- 1080p60

The product also supports 270MBit/s DVB- ASI

Test Patterns

The cards have an internal test pattern generator, which can help to keep circuits live and aid testing. This takes the form of a pre-defined 'colour bars' test pattern.

The test pattern will be enabled by default on 'A' end cards and disabled on 'B' end cards, and will be set to 3GBit/s (3G-SDI) to correspond with the upper limit of the service provided. The test pattern can be enabled/disabled upon request. Please refer to the Broadcast Access product and process descriptions.

Note that a slightly different pattern is used for each of the three rates: 270Mbit/s (SD-SDI) – SIN474 refers, 1.485GBit/s (HD-SDI) SIN 475 refers or 3GBit/s (3G-SDI) – SIN507 refers.

Further information

For enquiries concerning connection availability between particular sites, and for further "sales and marketing" information about this service please contact your BT Account Manager or Openreach Customer Business Manager.

See http://www.openreach.co.uk

For technical queries regarding the content of this document please submit an email query to the following address:
https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do

If you have enquiries relating to this document then please email:
orsinsfa@openreach.co.uk

References

[1]	SMPTE 424	TV Standard. 3Gb/s Signal/Data Serial Interface
[2]	SMPTE 292	TV Standard. Mapping and Interconnects; 1.5GBit/s SDI.
[3]	ITU-R Recommendation BT.656	Interfaces for digital component video signals in 525-line and 625-line television systems operating at the 4:2:2 level of Recommendation ITU-R BT.601
[4]	SMPTE Standard 259M	For Television — SDTV Digital Signal/Data — Serial Digital Interface
[5]	ETSI EN50083	Interfaces for CATV/SMATV Headends and similar Professional Equipment

For further information or copies of referenced sources, please see document sources at:

https://www.openreach.co.uk/orpg/home/helpandsupport/sins/sins.do

Glossary

1080p HD-SDI	Progressive scan full resolution HD-SDI video format
BNC	Bayonet Neill-Concelman Connector, Industry standard broadcast coaxial connector
CP	Communications Provider
DVB-ASI	Digital Video Broadcasting - Asynchronous Serial Interface
ETSI	European Telecommunications Standards Institute
HD-SDI	High Definition-Serial Digital Interface
IEC	The International Electrotechnical Commission standards body
ITU-R	International Telecommunication Union – Radiocommunication Sector. ITU-R was formally known as CCIR
NTE	Network Terminating Equipment
SDI	Serial Digital Interface
SDV	Serial Digital Video
SIN	Suppliers' Information Note
SMPTE	The Society of Motion Picture and Television Engineers

History

Issue 1.0	October 2011	First Issue
Issue 2.0	January 2014	Updated to include SMPTE SDI spec
Issue 3.0	August 2014	Addition of section 4.5 (Test Patterns) Change SINet site references from http://www.sinet.bt.com to http://www.btplc.com/sinet/
Issue 3.1	August 2020	Changes to branding, from BT to Openreach including changes to reflect new Openreach SIN site and Openreach SIN email address
Issue 3.1	July 2021	Annual Review – no changes required – issue remains unchanged.
Issue 3.1	July 2022	Annual Review – no changes required – issue remains unchanged.
Issue 3.1	July 2023	Annual Review – no changes required – issue remains unchanged.

Issue 3.1	August 2024	Annual Review – no changes required – issue remains unchanged.

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